TRB

Conference on

Remote Sensing and Spatial Information Technologies for Transportation

Organized By:
Transportation Research Board

Sponsored By:
U.S. Department of Transportation
Research and Special Programs Administration

Co-Sponsored By:
AASHTO
NASA
National States Geographic Information Council

Images Courtesy of spaceimaging.com

December 3 - 5, 2000
National Academy of Sciences
2101 Constitution Avenue, Washington, D.C.

Dear Conference Participants:

Transportation agencies at all levels face unprecedented challenges today. Increasing demands are being placed on these agencies to preserve the existing transportation system and to take on new missions. To accomplish these expanding responsibilities, transportation agencies must better understand customer expectations, manage staff and financial resources differently, and adapt to new technologies and business practices. A variety of advanced technologies are available to enhance planning, designing, managing, operating, and maintaining all modes of transportation.

Aerial and satellite remote sensing represents one area experiencing rapid development. The U.S. Department of Transportation has initiated a major research program focusing on transportation related applications of aerial and satellite remote sensing. The program includes funding four university consortia and a series of related technology application projects in remote sensing.

The Transportation Research Board (TRB), the U.S. Department of Transportation, the American Association of State Highway and Transportation Officials (AASHTO), and the National States Geographic Information Council (NSGIC) are sponsoring a conference to facilitate an ongoing dialogue between funded researchers and transportation professionals. The Conference is Sunday through Tuesday, December 3-5, 2000 at the National Academy of Sciences Building in Washington, D.C.

This conference presents an excellent opportunity for transportation professionals (1) to understand the capabilities remote sensing can offer for transportation planning, design, management, and operations, (2) to comment on the scope and relevance of the initial funded research projects, and (3) to identify priorities for future research. Remote sensing professionals will learn the types of products and support transportation professionals need.

The preliminary program, registration form, and hotel information are included in this packet. I hope you can participate in this challenging event!

David Ekern
Conference Chair
Assistant Commissioner
Minnesota Department of Transportation

Remote Sensing and Spatial Information Technologies for Transportation

Preliminary Program

Sunday, December 3, 2000

1:00 PM 5:00 PM **WORKSHOP: INTRODUCTION TO REMOTE SENSING**

This workshop will provide an overview of remote sensing for those transportation professionals unfamiliar with the technology. While no fee is charged for the workshop, attendance should be indicated on the registration form to assure space.

Remote Sensing Process
Rick Watson, University of New Mexico
Remote Sensing Sensors
Roger King, Mississippi State University
Techniques to Process Remote Sensing Data
Carolyn Merry, Ohio State University
Applications of Remote Sensing
Mike Goodchild and Val Noronha, University of California, Santa Barbara

5:00 PM 6:30 PM **RECEPTION**

Monday, December 4, 2000

7:45 AM 8:30 AM **CONTINENTAL BREAKFAST**

8:30 AM 10:15 AM **OPENING SESSION**

Welcome
David Ekern, Assistant Commissioner, Minnesota DOT

Transportation Vision for 2050
Mortimer L. Downey, Deputy Secretary, U.S. Department of Transportation (invited)

Remote Sensing Vision for 2050
Dr. Ghassem R. Asrar, Associate Administrator, Earth Science Enterprise, NASA (invited)

The Changing Face of DOTs
Robert E. Skinner, Jr., Executive Director, Transportation Research Board

US DOT Remote Sensing Program & Other Agency Programs
K. Thirumalai, Chief Engineer, Research and Special Programs Administration

The Changing Face of Remote Sensing
John R. Jensen, Carolina Distinguished Professor, University of South Carolina

10:45 AM 12:45 PM **UNIVERSITY CONSORTIA PRESENTATIONS** (General Session)

The U.S. Department of Transportation has provided multi-year funding for four university consortia to develop a National Consortium on Remote Sensing in Transportation (NCRST). Each consortium has a topical focus. This session will provide an overview of each consortium's first year program (visit http://www.cfm.ohio-state.edu/info/ncrst.html for more information on each NCRST consortia).

NCRST-F: Traffic Surveillance, Monitoring, and Management
Dr. Joel Morrison, Director, Ohio State University Center for Mapping

NCRST-E: Environmental Assessment, Integration, and Streamlining
Roger King, Chief Engineer, Remote Sensing Technology Center, Mississippi State University

NCRST-I: Transportation Infrastructure Management
Dr. Michael Goodchild, National Center for Geographic Information and Analysis, University of California, Santa Barbara

NCRST-H: Hazards, Safety, and Disaster Assessment
Stanley A. Morain, Director, Earth Data Analysis Center, University of New Mexico

12:45 PM 1:45 PM **LUNCH**

1:45 PM 3:15 PM **BREAKOUT SESSIONS ON CONSORTIA THEMES & CHALLENGES**

These breakouts will give both transportation users and remote sensing professionals the opportunity to (1) further explore the consortium projects, especially their potential usefulness to transportation users, (2) suggest important transportation issues where remote sensing may offer benefits, and (3) define challenges for implementation of remote sensing capabilities in transportation. These four discussion meetings will be repeated at 3:30 PM to provide everyone the opportunity to participate in two topical groups. The breakout facilitators will report on the content of the breakout sessions on Tuesday at 8:30 AM.

Breakout Topics and Discussion Facilitators:

Traffic Surveillance, Monitoring, and Management
Anita Vandervalk, Manager of the Transportation Statistics Office, Florida Department of Transportation
Mark Hallenbeck, Director, TRAC, University of Washington

Environmental Assessment, Integration, and Streamlining
Leni Oman, Environmental Initiatives Manager, Washington Department of Transportation
Lawrence Friedl, U.S. Environmental Protection Agency

Transportation Infrastructure Management
Dave Huft, Research Engineer, South Dakota Department of Transportation
Dave Gorg, Surveying & Mapping Engineer, Minnesota Department of Transportation

Disaster Assessment, Safety, and Hazards
Bruce Davis, Chief Scientist, NASA Stennis Space Center
Ted Jones, Florida Department of Transportation

3:45 PM 5:15 PM **BREAKOUT SESSIONS ON CONSORTIA THEMES** (repeat from 1:45 PM)

5:15 PM 6:30 PM **RECEPTION**

Tuesday, December 5, 2000

8:30 AM 10:30 AM **BREAKOUT REPORTS ON THEMES AND CHALLENGES**

Traffic Surveillance, Monitoring, and Management
Anita Vandervalk, Manager of the Transportation Statistics Office, Florida Department of Transportation
Mark Hallenbeck, Director, TRAC, University of Washington

Environmental Assessment, Integration, and Streamlining
Leni Oman, Environmental Initiatives Manager, Washington Department of Transportation
Lawrence Friedl, U.S. Environmental Protection Agency

Transportation Infrastructure Management
Dave Huft, Research Engineer, South Dakota Department of Transportation
Dave Gorg, Surveying & Mapping Engineer, Minnesota Department of Transportation

Disaster Assessment, Safety, and Hazards
Bruce Davis, Chief Scientist, NASA Stennis Space Center
Ted Jones, Florida Department of Transportation

11:00 AM 12:30 PM **CONFERENCE SUMMARY AND FUTURE DIRECTIONS**

Representatives from several transportation and remote sensing sectors will reflect on what they have heard in the breakout sessions and recommend steps the community can take to enhance the implementation of remote sensing. This is an opportunity to frame issues for the 2001 TRB Remote Sensing conference. The session will end with audience discussion.

Chair: David Ekern, Assistant Commissioner, Minnesota Department of Transportation

Discussants:
David Fletcher, President, GEODIGM
Lawrence Christenson, Engineer of Photogrammetry, Michigan Department of Transportation (invited)
Jeff Tayman, Director of Research and Information Systems, San Diego Association of Governments
Ian MacGillivray, Iowa Department of Transportation
Lawrie Jordan, President, ERDAS
John Jensen, Carolina Distinguished Professor, University of South Carolina

12:30 PM **ADJOURN**

1:00 PM 4:00 PM **CONFERENCE STEERING COMMITTEE MEETING**

Remote Sensing and Spatial Information Technologies for Transportation

National Consortia for Remote Sensing in Transportation

National Center on Remote Sensing in Transportation – Disaster Assessment, Safety & Hazards

The focus of the Safety, Hazards and Disaster Assessment consortium's research is on the development of analytical tools to identify, map, and assess hazards and plan for disasters as they affect transportation systems. The application of remote sensing to safety and disaster planning and assessment provides an opportunity to monitor hazards, evaluate the impacts of natural and man-made disasters, and to plan for evacuation and maintenance of transportation lifelines. Computer analysis procedures designed to extract these transportation lifelines from satellite imagery are being developed to improve the availability of emergency and disaster relief services for thousands of people who find themselves isolated by natural and man-made disasters and health emergencies. The consortium is developing methods that provide for the integration of remotely sensed imagery into evacuation planning and implementation, and to the assessment of natural and man-made disasters. The goals of this effort are to provide local, state, and national transportation agencies the tools necessary to rapidly and effectively address issues of safety, hazards, and disaster assessment using the most up-to-date methods and information available.

University of New Mexico
The George Washington University
Oak Ridge National Laboratory
The University of Utah
http://riker.unm.edu/dot/intro.htm

National Center on Remote Sensing in Transportation – Environmental Assessment

The theme of this consortium is the development of remote sensing solutions that more efficiently move transportation projects from the planning to the construction stage. Since the passage of the National Environmental Policy Review Act of 1969 (NEPA), the Clean Air Act, the Clean Water Act, the Intermodal Surface Transportation Efficiency Act, and other related legislation, transportation agencies have been obligated to process transportation projects through often rigorous and time-consuming environmental reviews. The necessity for these reviews is evident, however, how to efficiently plan alternative routes and to assess their environmental impacts is not quite as evident. Therefore, this consortium is exploring how remote sensing technology solutions may be used for streamlining the environmental assessment process and validating the usefulness of remote sensing imagery for providing the information necessary to meet environmental reviews. The end result is to more beneficially utilize a transportation agency's time and resources during the review process and expedite moving into the construction phase with the optimum route.

Mississippi State University (RSTC)
University of Mississippi (CAIT)
Auburn University (GHCC)
NASA Marshall Space Flight Center (GHCC)
University of Alabama in Huntsville (GHCC)
Universities Space Research Associates (GHCC)
EarthWatch, Inc.
Intermap Technologies, Inc.
http://www.rstc.msstate.edu/NCRSTE/

National Center on Remote Sensing in Transportation-Flows

The emphasis of this consortium is on transportation flows in three areas: traffic flow monitoring, traffic flow management and intermodal flow activities. The use of remote sensing can enhance the efficiency of many of the present practices used to determine the level of service, vehicle miles traveled (VMT), average annual daily traffic (AADT), and vehicle classifications and counts. Remote sensing can also help to determine passenger and freight flows at intermodal centers (park and ride, ports, TOFC/COFC, air/rail/bus/ferry terminals), and identify congestion points and patterns. Imagery can improve spatial accuracy, the visualization of traffic flows by the fusion of multisensor databases, and hypothesis generation.

The Ohio State University
George Mason University
University of Arizona
http://www.cfm.ohio-state.edu/info/NCRST_F/ncrst-f.html

National Center on Remote Sensing in Transportation – Infrastructure Management

Management of infrastructure involves systematic maintenance, operation, and renewal of assets such as pavement, bridges, pipelines, rail lines, harbors and airports. Information on the location and condition of these assets is critical to effective management. The consortium will employ both traditional and emerging technologies to build inventories of infrastructure and to improve the accuracy of map databases. Simpler methods, such as measurement of shoulder width and curvature from aerial photographs, will address the immediate needs of local agencies. At the high end, automated recognition procedures will be developed to detect distinctive patterns such as paved highways, parking lots and airports. Hyperspectral imagery will show subtle differences in material composition, thereby helping to build inventories of bridges and to examine deterioration of pavement. Fusion of LIDAR and digital photography will enable development of "as-built" databases of transportation corridors and associated infrastructure such as building footprints and elevations.

University of Wisconsin-Madison
University of California-Santa Barbara
University of Florida
Iowa State University
http://www.ncgia.ucsb.edu/ncrst/

Remote Sensing and Spatial Information Technologies for Transportation

Logistics

LOCATION

The conference will be held at the National Academy of Sciences Headquarters, which is located on the National Mall in downtown Washington, DC, with ready access to DC's tourist spots.

The National Academy of Sciences
2101 Constitution Avenue, NW
Washington, DC 20418

ACCOMMODATIONS

The conference hotel is the State Plaza, which is within walking distance of the National Academy of Sciences building. The conference rate of $123.00 plus $17.84 tax is available only through National Academies Travel until ***November 10, 2000***. Please call National Academies Travel at (800) 801-6696 or (202) 298-9046 and refer to **Event Code #19572** in order to make your reservations.

The State Plaza Hotel
2117 E Street, NW
Washington, DC 20037
(202) 833-6965

Rate: $123.00 plus $17.84 tax
Cut-off date: November 10, 2000
NAT: (800) 801-6696

REGISTRATION

Please mail or fax the attached registration form to TRB by **November 28.** The registration fee for the conference is **$95**, which includes Sunday and Monday night receptions (please RSVP for the Sunday reception), two continental breakfasts, Monday lunch, and breaks. No fee will be charged for the Sunday afternoon workshop on remote sensing but please reserve a space by indicating your plans to attend on the registration form.

Note: On-site registration will not be available.

FOR MORE INFORMATION:

Program: Thomas Palmerlee, TRB, (202) 334-2907, tpalmerl@nas.edu
Registration: Gordy Franke, TRB, (202) 334-2966, gfranke@nas.edu

Remote Sensing and Spatial Information Technologies for Transportation

Registration Form

Return form to TRB by **November 28**. **On-site registration will not be available.**
(Form can be filled in electronically before printing.)

Name:_____Nickname (for badge):_____

Title:_____

Affiliation:_____

Address:_____

City:_____ State:_____ Zip Code:_____

Country:_____

Phone:_____ Fax:_____

Email:_____

Special Needs (please explain):_____

I will also be attending (at no additional charge):

- ☐ Workshop on Remote Sensing (State Plaza Hotel, Sunday, December 3, 1:00 - 5:00 PM)
- ☐ Sunday Reception (State Plaza Hotel, Sunday, December 3, 5:30 - 6:30 PM)

Registration Fee=**$95.00**
Includes Sunday and Monday receptions, 2 breakfasts and 2 lunches

☐ Credit Card #:_____ Expiration Date:_____

Circle one: Visa, Mastercard, or American Express

☐ Check (payable to TRB)

☐ Purchase Order (gov't and universities only) #_____
(TRB/NAS Federal ID: 53-0196932)

Please mail this form to: **TRB, Box 289, Washington, DC 20055**
Or fax to Gordy Franke at: 202-334-2030

☐ I cannot attend this year's conference but would like to remain on the mailing list for the 2001 conference.

If you have any questions contact Gordy Franke at 202-334-2966, or gfranke@nas.edu.